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**Thomas P Kirwin**  
Site Vice President

PNP 2011-026

March 23, 2011

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

SUBJECT: Licensee Event Report 2011-002, Automatic Reactor Trip and  
Auxiliary Feedwater System Actuation  
Palisades Nuclear Plant  
Docket 50-255  
License No. DPR-20

REFERENCES: 10 CFR 50.73

Dear Sir or Madam:

Licensee Event Report (LER) 2011-002 is enclosed. The LER describes an automatic actuation of the reactor protection system and the auxiliary feedwater system. The occurrence is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A).

This letter contains no new commitments and no revisions to existing commitments.

Sincerely,

A handwritten signature in black ink that reads "Thomas Kirwin".

TPK/TAD

Enclosure (1)

CC Administrator, Region III, USNRC  
Project Manager, Palisades, USNRC  
Resident Inspector, Palisades, USNRC

**ENCLOSURE**

**LER 2011-002**

**AUTOMATIC REACTOR TRIP AND AUXILIARY FEEDWATER SYSTEM  
ACTUATION**

**3 Pages Follow**

<b>NRC FORM 366</b> <b>U.S. NUCLEAR REGULATORY COMMISSION</b> (10-2010)					<b>APPROVED BY OMB NO. 3150-0104</b>					<b>EXPIRES 10/31/2013</b>																			
<b>LICENSEE EVENT REPORT (LER)</b>															Estimated burden per response to comply with this mandatory information collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.														
<b>1. FACILITY NAME</b> PALISADES NUCLEAR PLANT										<b>2. DOCKET NUMBER</b> 05000255					<b>3. PAGE</b> 1 OF 3														
<b>4. TITLE</b> Automatic Reactor Trip and Auxiliary Feedwater System Actuation																													
<b>5. EVENT DATE</b>			<b>6. LER NUMBER</b>			<b>7. REPORT DATE</b>			<b>8. OTHER FACILITIES INVOLVED</b>																				
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MONTH	DAY	YEAR	FACILITY NAME			DOCKET NUMBER																	
01	22	2011	2011 - 002 - 00			03	23	2011																					
<b>9. OPERATING MODE</b>  <div style="text-align: center; font-size: 2em;">1</div>			<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)</b>																										
<b>10. POWER LEVEL</b>  <div style="text-align: center; font-size: 2em;">100</div>			<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)																							
			<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)																							
			<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)																							
			<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)																							
			<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)																							
			<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)																							
			<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)																							
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER																										
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A																										
<b>12. LICENSEE CONTACT FOR THIS LER</b>																													
FACILITY NAME Terry Davis										TELEPHONE NUMBER (Include Area Code) (269) 764-2117																			
<b>13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT</b>																													
CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX																				
B	EA	CBL5	CABLEC	Y																									
<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO										<b>15. EXPECTED SUBMISSION DATE</b>																			
										MONTH	DAY	YEAR																	
<b>ABSTRACT</b> (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)																													
<p>On January 22, 2011, at 1735 hours, with the plant in Mode 1 at 100% power, the operation of relay 251-2/SPG3, station power transformer 1-3 neutral to ground, actuated relay 386B, generator direct trip lockout relay (backup), opening the main generator output breakers to the transmission system causing a turbine trip. The turbine trip actuated the reactor protective system to trip the reactor due to a loss of load. As expected, the auxiliary feedwater system started automatically to recover steam generator level.</p> <p>The cause for operation of the neutral to ground relay, and subsequent automatic plant trip, was a ground fault on a medium voltage cable that provides electrical power to bus 1G, via breaker 252-401, from station power transformer 1-3. The probable cause of the ground fault on the cable was determined to be flaws in the insulation, with the effects of moisture acting on these flaws over time, causing the insulation to degrade.</p> <p>The event is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in an actuation of both the reactor protection system and the auxiliary feedwater system.</p>																													



(10-2010)

# **LICENSEE EVENT REPORT (LER) CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			
PALISADES NUCLEAR PLANT	05000255	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 3
		2011	- 002	- 00	

## **EVENT DESCRIPTION**

On January 22, 2011, at 1735 hours, with the plant in Mode 1 at 100% power, the operation of relay 251-2/SPG3 [51;EA], station power transformer 1-3 neutral to ground, actuated relay 386B [86;EA], generator direct trip lockout relay (backup), opening the main generator output breakers [BKR;FK] to the transmission system causing a turbine [TRB;EL] trip. The turbine trip actuated the reactor protective system [JD] to trip the reactor [RCT;AB] due to a loss of load. As expected, the auxiliary feedwater system [BA] started automatically to recover steam generator [SG;AB] level.

There were no inoperable structures, systems, or components at the start of this event that contributed to the event.

The event is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in an actuation of both the reactor protection system and the auxiliary feedwater system.

## **CAUSE OF THE EVENT**

An event evaluation determined the cause for operation of the neutral to ground relay, and subsequent automatic plant trip, was a ground fault on a medium voltage cable [CBL5] providing electrical power to bus 1G, via breaker 252-401, from station power transformer 1-3. The probable cause of the ground fault on the cable was determined to be flaws in the insulation, with the effects of moisture acting on these flaws over time, causing the insulation to degrade. The shielded cable, manufactured by Cablec with ethylene propylene rubber (EPR) insulation, was installed in 1989 with the expected lifetime to be much longer than exhibited.

The evaluation identified additional causes that include ineffective use of operating experience related to medium voltage cable insulation problems, and testing methods that were incapable of trending insulation condition to support repair and/or replacement.

The cable has not been removed and physically examined. Therefore, the cause of the suspected flaw(s) in the insulation is unknown at this time. Cable removal and analysis is planned.

## **CORRECTIVE ACTIONS TAKEN**

A temporary modification was approved and implemented that allows bus 1G to be isolated from station power transformer 1-3 and re-energized from start-up transformer 1-3.

## **CORRECTIVE ACTIONS TO BE TAKEN**

A plan is being developed to remove samples of the failed cable for laboratory testing and analysis.

**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

	<b>2. DOCKET</b>	<b>6. LER NUMBER</b>			
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
PALISADES NUCLEAR PLANT	05000255	2011	- 002	- 00	3 OF 3

The original design will be restored to allow supply of power to bus 1G from station power transformer 1-3.

A condition monitoring method will be established which will identify progressive deterioration of medium voltage shielded cable insulation.

Monitoring plans will be created for buried medium voltage shielded, and unshielded, cables that will provide timely identification of adverse insulation changes.

**ASSESSMENT OF SAFETY CONSEQUENCES**

The event is considered to be of very low safety significance. All safety systems functioned as expected.

**PREVIOUS SIMILAR EVENTS**

None